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ABSTRACT

A study was conducted at Rancho Santiago College (RSC) to identify personal and academic factors that are predictive of students' success in their courses. The study examined the following possible predictors of success: language and math test scores; background characteristics; length of time out of high school; high school background; college plans; and interest in receiving information about campus support services. Students who were enrolled in one of eight general education courses and had recently taken placement exams were surveyed. Study findings, based on student history data found in the college's database and on survey responses from 221 of the 422 students contacted, included the following: (1) 30% of the students' mothers and 28% of their fathers never completed high school; (2) the students had completed an average of 3.5 years of high school English and worked an average of 11 to 20 hours a week while attending RSC; (3) only 8% of the respondents had never used the college library or had used it only once; (4) 25% used counseling services only once, and 60% used the job placement center; (5) the degree to which a student could rely on his/her support system was a good predictor of success in four of the six transfer-level courses studied; (6) mother's educational level was an important predictor in four of the eight courses, but father's education affected only two of the courses; and (7) English test scores predicted success in math classes, and math test scores predicted success in such non-math classes as political science and speech. The study report includes findings for each class and the survey instrument. (AYC)

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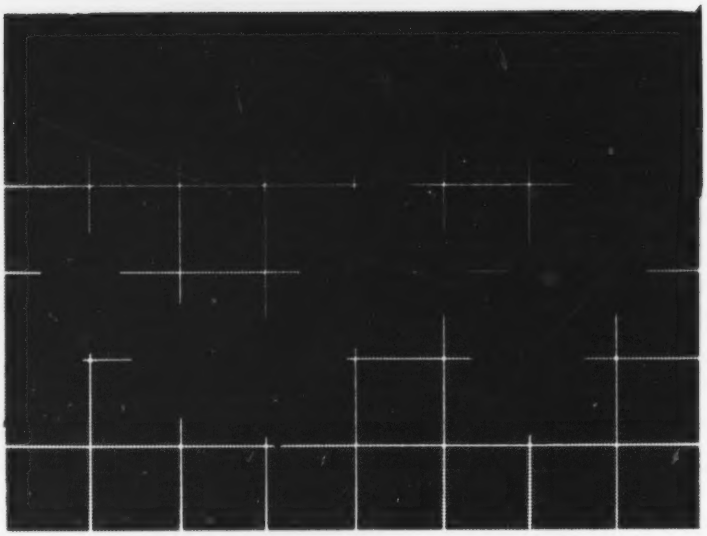

INSTITUTIONAL RESEARCH

JC890530

PREDICTING CLASSROOM SUCCESS

by

Ronald P. Kessler, Ph.D.

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INTRODUCTION

Statement of the Problem

While instructors and administrators have always been concerned about the factors that predict student success in the classroom, there is now political and economic pressure to delineate accurate predictors. In the past few years, the Chancellor's office has directed the Community Colleges in California to work towards setting minimum standards for transfer level courses. However, an initial investigation at RSC (Kessler, 1987) which examined the correlation between reading test scores and classroom grades proved disappointing. In most of the classes sampled, there was only a modest relationship between scores and grades. Further, a series of discriminant analyses indicated that many students who would have been refused entrance based on cut-off scores would have passed courses with a "C" or better.

At about this same point in time, similar work was proceeding at Santa Barbara City College (SBCC) on a project called "Model Practices for Establishing Course Placements and Course Requisites" (Cohen et. al., 1988). Data from eight colleges was compiled with the purpose of designing guidelines for placing students into entry-level courses based on predictors of success (grade of "C" or better). The researchers outlined factors for each course which predicted success. The variables examined in the SBCC study are listed in Table 1.

Purpose of Present Study

The main purpose of this study was to extend earlier attempts at identifying predictors of course success by incorporating both academic and personal factors in a multi-dimensional model. In this way, we hoped to better understand some of the variables that

distinguish between successful and unsuccessful students at RSC.

It is clear that many factors outside of a student's academic life influence classroom persistence. The results of previous investigations and conversations with instructors on campus have allowed us to compile a list of possible predictors of success (See Table 3).

TABLE 1

Student Variables Measured in SBCC Study

1. Language and math skills (test scores)
2. Background characteristics (age, ethnicity, sex, etc.)
3. Length of time out of high school
4. Educational background:
    a. Highest grade completed
    b. High school GPA
    c. Yrs of HS English completed
    d. Grade in HS English class
    e. Highest level of math class
    f. Grade in last math class
5. College Plans:
    a. Number of units in next semester
    b. Number of hours worked during semester
    c. Most important educational goal
    d. Major field of study
    e. How definite student is about current major
    f. How important is success to student's family
    g. How important is college to the student
6. Interest in receiving information about campus support services

METHOD

Procedure

This retrospective study was conducted through the use of student history data available from the RSC database and through mailed questionnaires. Students who were enrolled in one of the courses sampled and, who had recently taken placement exams were mailed the questionnaire. After three weeks a second mailing was completed. Those who did not respond by mail were contacted in telephone interviews. Those people who completed the questionnaire received a coupon for a free hamburger at the student center. Out of 422 students contacted, there were 221 (52%) in the final sample.

Courses Sampled

General education courses which had enrolled an adequate number of students with recent assessment scores were selected to be studied. The final list of sampled courses includes:

English 060	English 101
English 061	Psychology 100
Math 010	Political Science 101
Math 110	Speech 100

Participants

Students could be a part of this investigation if they met the following criteria:

1. First-time freshmen at RSC in Fall 1987, Spring 1988, or Fall 1988.
2. Student attended one of the RSCCD feeder high schools.
3. Student had recently taken the English, reading, and/or the Math placement tests.
4. Student was enrolled in at least one of the courses sampled.

The sample was divided into two groups for each course. Students who received a "C" or better in any of the classes was defined as "successful", and those who earned a "D" or "F" were "unsuccessful". Those who earned "CR" (credit) were combined with the successful group, and "NC" grades were recoded to an "F". Students with a "W" in a sampled class were excluded from the analyses for that class. The final sample consisted of 221 eligible students of which there were 108 men and 113 women. The average GPA for the sample was 3.06 (sd= 1.8). The breakdown of high schools attended by the students is listed in Table 2 below.

Table 2

Distribution of Students in Our Sample by High School Attended

School	Number	Percent
Santa Ana	21	9.0
Valley	33	14.9
Villa Park	19	8.6
Orange	31	14.0
Mt. View	1	.5
Santiago	22	10.0
Garden Grove	12	5.4
El Modena	39	17.6
Canyon	15	6.8
Saddleback	19	8.6
Mater Dei	9	4.1

Questionnaire

The items on the survey were comprised of both multiple-choice questions and 7-point Likert scales (appendix A). Students were asked to rate themselves and others on the following Likert items:

1. How important is it to you to be successful in college?
2. How important is it to your supportive person(s) that you be successful?
3. How often can you depend on this person to help you?
4. How easy is it for you to make new friends?

Students also indicated how often they used campus services.

TABLE 3

Variables Used in Discriminant Analyses to Differentiate Groups

- English test score
- Reading test score
- Math test scores
- High school GPA
- Grade in last English class
- Years of high school English taken
- Whether student took algebra in high school
- How important is it for student to be successful?
- Mother's educational level
- Father's educational level
- How much student's significant other cares about the student's success
- The degree student can depend on supportive person in their life

Statistical Analyses

Due to the nature of the variables under study, a discriminant analysis was the primary method used to identify predictors. Through this method, we were able to rank the predictors for the courses sampled. Those variables which have greatest predictability could be separated from those with least.

Since discriminant analysis is the primary method of viewing the data, a quick review of the procedure is in order. Given the fact that we know whether a student was actually successful or not (we have their grades), the purpose of the discriminant procedure is to determine how accurately we can "postdict", or classify a student's outcome had we used our predictor variables. For example, let us say that in course "A", 75 of the students were successful ("C" or higher). Our concern is, "If all we had were our list of predictors, how many of those 75 people would we have predicted to be successful"? If the results of the analysis indicated that 65 should be successful, then our classification rate or "hit-rate" would be 65/75 or 87%. Our first task is to identify those variables which best predict a student's performance in the courses sampled. Then, the second step would be to determine the "hit-rates".

The mathematical objective of a discriminant analysis is to statistically distinguish between two (or more) groups on any number of variables or dimensions. In this study, with only two groups (successful vs unsuccessful), there are several predictor variables

which will be examined (see Table 3). Using these predictors, the analyses build the best possible model in an attempt to tell the two groups apart or to discriminate between them. In a random population, it is virtually impossible to find the set of factors which could differentiate groups perfectly.

RESULTS

Description of Sample

In order to gain an overview of the students sampled, a qualitative analysis may be helpful (See Table 3.1). Out of all 221 students, 35% had mothers who were high school graduates, and 24% of the mothers had a two year degree. Nearly one-third of the student's mothers did not graduate from high school. As for the fathers of our students, 27% graduated high school, 25% had completed two years of college, and 28% never completed high school. As to the students themselves, they completed an average of 3.5 years of high school English and worked an average of 11-20 hours a week while attending RSC.

One of the areas we focused on was the degree to which students were involved in campus activities or services. Only 4% of our sample reported they never used the library and another 4% used it once. Nearly three-fourths (73%) of the sample never used the fitness center, 81% never attended any performances/plays,and 58% did not attend concerts. Only 50% attended barbecues at lunch, and 30% utilized the health center.

One-fourth of the sample used counseling services once, and 60% used the job placement center. Most students (73%) do not take advantage of either student orientation or the learning center (91% used it once or not at all).

Predictor Findings

We have been unable to find global predictors which will consistently and reliably differentiate successful from non-successful students (in the courses sampled). Summary statistics in Table 3.2 indicate summary trends, however. For instance, the degree to which a student could rely on his/her support system was a good predictor in four out of the six transfer level courses studied. We found only one predictor for English 061 (English score), but it only accounted for a very small amount of variance (7%). Notice

also that there were seven predictors for Math 110 courses; but even with all seven, only 25% of the variance was accounted for. There were five variables which predicted success in both Math 110 and Psychology 100. These were the only two courses where there was any consistency across variables.

The mother's education level for our students was an important predictor in four of the eight courses, but father's education only impacted two of the eight courses sampled. Contrary to expectations, English test scores predicted success in Math classes. Similarly, Math scores predicted success in Math 10 as well as non-math classes such as English 60, Political Science, and Speech. Finally, high school GPA and the number of years of high school English were poor predictors in differentiating students in this study.

These findings confirm that for RSC students, there are many variables relating to student success in courses. Some of those variables we know and have studied and many remain to be identified. For the most part now, however, this study reveals little that can easily and generally be applied.

Table 3.1

Characteristics and Description of Entire Sample (N=221)

VARIABLE	< 12	HS Grad	2 Yr.Coll	BA/BS	Grad
Mothers Education	30%	35%	24%	7%	3%
Fathers Education	28%	27%	25%	15%	5%
Average HS GPA	3.1				
Mean Hours Worked	11-20 per wk.				
Mean Yrs. HS English	3.4				

Utilization of Campus Services

	Frequency of Use			
CAMPUS SERVICE	Never	Once	2-3 Times	Many Times
Library	4%	4%	25%	66%
Fitness Center	73%	5%	8%	13%
Attend Plays	81%	6%	7%	5%
Barbeques	50%	17%	20%	12%
Health Center	71%	11%	14%	3%
Art Shows	74%	12%	10%	4%
Sporting Events	64%	8%	13%	15%
Counseling	25%	27%	36%	11%
Job Center	40%	21%	32%	6%
Student Orientation	73%	9%	7%	11%
Learning Center	56%	35%	7%	1%

TABLE 3.2

A Summary Matrix of the Significant Discriminating Predictors For Each Course

VARIABLE	COURSES							
	ENG 060	ENG 061	ENG 101	MATH 010	MATH 110	PSYCH 100	POLYSCI 101	SPCH 100
English Score		X		X	X			
Reading Score	X							X
Math Score	X			X			X	X
HS G.P.A.						X		
Last Eng. Grade							X	X
Yrs. HS English								X
Ability to make Friends	X				X	X		
Mother's Education	X				X	X	X	
Father's Education					X	X		
How important is success to student?					X	X		
How important is the student's success to the family?			X		X			
Dependability of the student's support system			X		X	X		X
Explained Variance [1]	35%	7%	12%	14%	25%	28%	18%	21%
Prediction Rate [2]	79%	64%	71%	74%	73%	76%	75%	80%

[1]Degree to which these variables account for this outcome.

[2]Percent of students who would be correctly placed using these variables.

ENGLISH 060

Summary

- Successful students worked significantly more hours per week
- Fathers of successful students had significantly higher education
- Successful students tend to have parents and siblings who support them while the unsuccessful group relied more on friends or nobody.
- 79% of successful students took high school algebra compared to 57% in the unsuccessful group.
- While not statistically significant, successful students reported they could depend on their primary support system more, and their family believed success was more important than the unsuccessful group.
- Both groups rated success as being equally important to them (the student).
- Contrary to expectations, unsuccessful students reported that it was easier for them to make new friends as compared to the successful group.
- The mother's educational level, reading test score, math score, and the ability to make friends differentiated the two groups with 77.3% accuracy.

ENGLISH 060

TABLE 4
Comparison of Group Characteristics

VARIABLE		GROUP				X^2
		Unsuccessful		Successful		
		N	%	N	%	
Sex						
Men		13	62	18	54	
Women		8	38	15	46	
Had HS Algebra	Yes	12	57	26	79	2.88
	No	9	43	7	21	
Hours worked During College						
	None	1	5	2	6	8.99*
	1-10	5	24	0	--	
	11-20	4	19	11	33	
	21-30	7	33	13	39	
	31-40	4	19	7	21	
Mothers Education						
	< 12th	10	48	9	28	4.98
	High School	8	38	10	31	
	2 Yr. College	2	10	7	22	
	BA/BS	1	5	3	9	
	Graduate School	0	--	3	9	
Fathers Education						
	< 12th	11	55	5	16	9.52*
	High School	4	20	11	36	
	2 Yr. College	3	15	8	26	
	BA/BS	0	--	3	10	
	Graduate School	2	10	4	13	
Attended Summer Readiness						
	Yes	1	5	2	6	< 1
	No	20	95	31	94	
Primary Support System						
	Mother or Father	10	50	25	76	5.87
	Sibling	3	15	3	9	
	Friend	5	25	2	6	
	Nobody	2	10	2	6	

*p <.05

ENGLISH 060

TABLE 5
Comparison of Mean Scores[1] for Personal Items Across Groups

VARIABLE	GROUP				t^2
	Unsuccessful (N= 21)		Successful (N= 33)		
	Mean	(SD)	Mean	(SD)	
How important is success to student?	5.9	(1.2)	5.93	(1.3)	< 1
How important is it to your support person that you succeed?	5.9	(1.9)	6.2	(1.1)	2.76
How often can you depend on this person?	5.0	(2.2)	5.5	(1.7)	1.66
How easy is it for you to make new friends	5.9	(1.2)	5.1	(1.6)	1.80

[1] Means are based on 7-point scales where higher scores= more favorable outcome.

Figures in parentheses are standard deviations.

[2] T-tests for independent samples (2-tailed tests)

ENGLISH 060

TABLE 6
Variables Which Discriminate Between Successful and Unsuccessful Students in English 60 Courses Arranged in Order of Significance

VARIABLE	GROUP				Standardized Coefficients[1]
	Unsuccessful		Successful		
	Mean	(Sd)	Mean	(Sd)	
1. Mother's educational level	< 12 Yr	--	HS Grad	--	.63
2. Reading score	23.60	12.3	33.50	20.2	.49
3. Math test	13.72	5.9	17.18	8.7	.46
4. Ability to depend upon support system	4.66	2.2	5.82	1.6	.42

Canonical Correlation[2] = .59**

CLASSIFICATION ANALYSIS

Actual Group	N	Predicted Group Membership	
		Unsuccessful	Successful
Unsuccessful	19	16 (84%)	3 (16%)
Successful	28	7 (25%)	21 (75%)

Percent of Students Correctly Classified: 78.7%

**p< .01

[1] These are Z-scores. They indicate how powerful each variable is as a predictor. Thus, a variable with a .80 value contributes twice as much as a .40 variable.

[2] A canonical correlation represents the correlation between the predictor variables & the two groups and is interpreted in the usual manner.

ENGLISH 061

Summary

- As with English 60, successful students worked more hours each week
- For both groups, there were no clear differences in either parent's education.
- Only 2 students out of 80 attended summer readiness.
- Successful students relied on parents to a greater degree than did unsuccessful students (74% vs. 53%).
- 18% of unsuccessful students said they had no one to depend on if they needed emotional support.
- Both groups rated success as equally important to them.
- Both groups rated success as important to their support system.
- Both groups found it fairly easy to make new friends.
- English test scores differentiated the two groups with 64% accuracy.

ENGLISH 061

TABLE 7
Comparison of Group Characteristics

VARIABLE		GROUP				X^2
		Unsuccessful		Successful		
		N	%	N	%	
Sex						
Men		10	58	29	46	
Women		7	42	34	54	
Had HS Algebra	Yes	13	76	53	84	< 1
	No	4	24	10	16	
Hours worked During College						
	None	0	--	6	10	3.69
	1-10	2	12	3	5	
	11-20	4	24	22	35	
	21-30	6	35	17	27	
	31-40	5	29	15	24	
Mothers Education						
	< 12th	6	35	21	34	4.14
	High School	6	35	20	32	
	2 Yr. College	3	18	16	26	
	BA/BS	1	6	5	8	
	Graduate School	1	6	0	--	
Fathers Education						
	< 12th	4	25	19	31	1.94
	High School	5	31	13	21	
	2 Yr. College	4	25	18	30	
	BA/BS	2	13	10	16	
	Graduate School	1	6	1	2	
Attended Summer Readiness						
	Yes	0	--	2	3	< 1
	No	17	100	60	97	
Primary Support System						
	Mother or Father	9	53	46	74	6.94
	Sibling	2	12	1	2	
	Friend	3	18	7	11	
	Nobody	3	18	5	8	

ENGLISH 061

TABLE 8
Comparison of Mean Scores[1] for Personal Items Across Groups

VARIABLE	GROUP				t[2]
	Unsuccessful (N= 17)		Successful (N= 63)		
	Mean	(SD)	Mean	(SD)	
How important is success to student?	6.2	(1.0)	6.2	(0.9)	< 1
How important is it to your support person that you succeed?	6.5	(0.9)	6.3	(1.6)	< 1
How often can you depend on this person?	6.1	(1.8)	5.4	(2.2)	1.4
How easy is it for you to make new friends?	5.2	(1.6)	5.7	(1.0)	2.52

[1] Means are based on 7-point scales where higher scores= more favorable outcome. Figures in parentheses are standard deviations.

[2] T-tests for independent samples (2-tailed tests)

ENGLISH 061

TABLE 9
Variables Which Discriminate Between Successful and Unsuccessful Students in English 61 Courses Arranged in Order of Significance

VARIABLE	GROUP				Standardized Coefficients[1]
	Unsuccessful		Successful		
	Mean	(Sd)	Mean	(Sd)	
1. English test score	36.45	18.6	46.51	18.6	.79

Canonical Correlation[2] = .26

CLASSIFICATION ANALYSIS

Actual Group	N	Predicted Group Membership	
		Unsuccessful	Successful
Unsuccessful	12	9 (75%)	3 (25%)
Successful	55	21 (38%)	34 (62%)

Percent of Students Correctly Classified: 64.1%

[1] These are Z-scores. They indicate how powerful each variable is as a predictor. Thus, a variable with a .80 value contributes twice as much as a .40 variable.

[2] A canonical correlation represents the correlation between the predictor variables & the two groups and is interpreted in the usual manner.

ENGLISH 101

Summary

- 93% of both groups had high school algebra
- More of the unsuccessful students worked 31-40 hours a week (36% vs 19%).
- The education levels for both parents were higher than parents of the English 60 and English 61 parents.
- Successful students depended less on their parents than unsuccessful students.
- The families of successful student valued the student's "success" significantly higher ($p < .05$).
- How important success is to a student's support system and the ability to depend on that support system differentiated the groups with 71% accuracy.

ENGLISH 101

TABLE 10
Comparison of Group Characteristics

VARIABLE		GROUP				X^2
		Unsuccessful		Successful		
		N	%	N	%	
Sex						
Men		6	43	26	45	
Women		8	57	32	55	
Had HS Algebra	Yes	13	93	54	93	.92
	No	1	7	4	7	
Hours worked During College						
	None	0	--	4	7	4.28
	1-10	0	--	4	7	
	11-20	6	43	19	33	
	21-30	3	20	20	35	
	31-40	5	36	11	19	
Mothers Education						
	< 12th	4	29	9	16	4.36
	High School	2	14	25	43	
	2 Yr. College	5	36	15	26	
	BA/BS	2	14	7	12	
	Graduate School	1	7	2	3	
Fathers Education						
	< 12th	5	35	10	17	3.44
	High School	2	18	18	31	
	2 Yr. College	3	21	17	29	
	BA/BS	3	21	10	17	
	Graduate School	1	7	3	5	
Attended Summer Readiness						
	Yes	0	--	5	9	< 1
	No	14	100	53	91	
Primary Support System						
	Mother or Father	12	86	41	71	5.20
	Spouse	1	7	1	2	
	Friend	0	--	7	12	
	Nobody	0	--	6	10	

ENGLISH 101

TABLE 11
Comparison of Mean Scores[1] for Personal Items Across Groups

VARIABLE	GROUP				t^2
	Unsuccessful (N= 14)		Successful (N= 58)		
	Mean	(SD)	Mean	(SD)	
How important is success to student?	6.1	(0.9)	6.1	(0.8)	< 1
How important is it to your support person that you succeed?	5.9	(1.3)	6.6	(1.0)	2.29*
How often can you depend on this person?	6.7	(0.7)	6.5	(1.4)	< 1
How easy is it for you to make new friends?	5.7	(1.3)	5.6	(1.2)	< 1

*$p < .05$

[1] Means are based on 7-point scales where higher scores= more favorable outcome. Figures in parentheses are standard deviations.

[2] T-tests for independent samples (2-tailed tests)

ENGLISH 101

TABLE 12
Variables Which Discriminate Between Successful and Unsuccessful Students in English 101 Arranged in Order of Significance

VARIABLE	GROUP				Standardized Coefficients[1]
	Unsuccessful		Successful		
	Mean	(Sd)	Mean	(Sd)	
1. How important is your success to your support system?	5.92	1.4	6.68	1.0	1.15
2. Ability to depend upon support system	6.71	.7	6.50	1.4	.77

Canonical Correlation[2] = .34*

CLASSIFICATION ANALYSIS

Actual Group	N	Predicted Group Membership	
		Unsuccessful	Successful
Unsuccessful	14	6 (43%)	8 (57%)
Successful	58	13 (22%)	45 (78%)

Percent of Students Correctly Classified: 70.8%

*p< .05

[1] These are Z-scores. They indicate how powerful each variable is as a predictor. Thus, a variable with a .80 value contributes twice as much as a .40 variable.

[2] A canonical correlation represents the correlation between the predictor variables & the two groups and is interpreted in the usual manner.

MATH 010

Summary

- More of the successful group had completed high school algebra (92% vs 70%).
- Nearly one-third of successful students had a mother who had two years of college.
- 80% of the unsuccessful group had a mother with a high school education or less.
- More unsuccessful students attended summer readiness (20% vs 8%).
- Both groups rated "success" as being equally important.
- Successful students said they had more reliable support systems.
- Math test scores differentiate the groups with 74% accuracy.

MATH 010

TABLE 13
Comparison of Group Characteristics

VARIABLE		GROUP				X^2
		Unsuccessful		Successful		
		N	%	N	%	
Sex						
Men		6	60	7	28	
Women		4	40	18	72	
Had HS Algebra	Yes	7	70	23	92	2.82
	No	3	30	2	8	
Hours worked During College						
	None	0	--	3	12	4.49
	1-10	1	10	3	12	
	11-20	3	30	7	28	
	21-30	5	50	5	20	
	31-40	1	10	7	28	
Mothers Education						
	< 12th	3	30	10	40	6.54
	High School	5	50	5	20	
	2 Yr. College	0	--	8	32	
	BA/BS	1	10	1	4	
	Graduate School	1	10	1	4	
Fathers Education						
	< 12th	2	20	8	32	1.43
	High School	3	30	6	24	
	2 Yr. College	2	20	6	24	
	BA/BS	1	10	3	12	
	Graduate School	2	20	2	8	
Attended Summer Readiness						
	Yes	2	20	2	8	1.01
	No	8	80	23	92	
Primary Support System						
	Mother or Father	6	60	18	75	1.48
	Spouse	0	--	0	--	
	Friend	3	30	3	13	
	Nobody	1	10	3	13	

MATH 010

TABLE 14
Comparison of Mean Scores[1] for Personal Items Across Groups

VARIABLE	GROUP				t^2
	Unsuccessful (N= 10)		Successful (N= 25)		
	Mean	(SD)	Mean	(SD)	
How important is success to student?	6.1	(1.1)	6.0	(1.1)	< 1
How important is it to your support person that you succeed?	6.5	(1.4)	6.9	(0.9)	< 1
How often can you depend on this person?	5.2	(2.7)	5.9	(2.0)	< 1
How easy is it for you to make new friends?	5.7	(1.3)	5.5	(1.5)	< 1

[1] Means are based on 7-point scales where higher scores= more favorable outcome. Figures in parentheses are standard deviations.

[2] T-tests for independent samples (2-tailed tests)

MATH 010

TABLE 15
Variables Which Discriminate Between Successful and Unsuccessful Students in Math 010 Arranged in Order of Significance

VARIABLE	GROUP				Standardized Coefficients[1]
	Unsuccessful		Successful		
	Mean	(Sd)	Mean	(Sd)	
1. Math test	9.80	6.2	13.64	3.4	1.00

Canonical Correlation[2] = .38*

CLASSIFICATION ANALYSIS

Actual Group	N	Predicted Group Membership	
		Unsuccessful	Successful
Unsuccessful	10	5 (50%)	5 (50%)
Successful	25	4 (16%)	21 (84%)

Percent of Students Correctly Classified: 74.3%

*$p < .05$

[1] These are Z-scores. They indicate how powerful each variable is as a predictor. Thus, a variable with a .80 value contributes twice as much as a .40 variable.

[2] A canonical correlation represents the correlation between the predictor variables & the two groups and is interpreted in the usual manner.

MATH 110

Summary

- Successful students said their families wanted them to succeed even more than the unsuccessful group ($p < .05$).
- Unsuccessful students attended summer readiness ($p < .001$).
- Nearly all students had taken high school algebra.
- Mothers of the successful group has higher levels of education
- Mother's education, the ability to make new friends, English score, father's education, how important success is to the student and his/her support system, and the ability to depend on a support system differentiated these groups at 73% accuracy.

MATH 110

TABLE 16
Comparison of Group Characteristics

VARIABLE		GROUP				X^2
		Unsuccessful		Successful		
		N	%	N	%	
Sex						
Men		10	63	25	46	
Women		6	37	30	54	
Had HS Algebra	Yes	15	94	54	98	< 1
	No	1	6	1	2	
Hours worked During College						
	None	1	6	3	6	< 1
	1-10	1	6	2	4	
	11-20	4	25	18	33	
	21-30	6	38	20	36	
	31-40	4	25	12	22	
Mothers Education						
	< 12th	3	19	14	26	7.91
	High School	4	25	20	36	
	2 Yr. College	5	31	19	35	
	BA/BS	3	19	1	2	
	Graduate School	1	6	1	2	
Fathers Education						
	< 12th	2	13	10	19	1.36
	High School	5	31	13	24	
	2 Yr. College	4	25	19	35	
	BA/BS	4	25	9	17	
	Graduate School	1	6	3	6	
Attended Summer Readiness						
	Yes	5	31	0	--	18.48***
	No	11	69	55	100	
Primary Support System						
	Mother or Father	12	80	40	74	5.00
	Spouse	0	--	1	4	
	Friend	1	7	6	11	
	Nobody	1	7	4	7	

*p< .001

MATH 110

TABLE 17
Comparison of Mean Scores[1] for Personal Items Across Groups

VARIABLE	GROUP				t^2
	Unsuccessful (N= 16)		Successful (N= 55)		
	Mean	(SD)	Mean	(SD)	
How important is success to student?	6.0	(1.0)	6.3	(0.8)	1.38
How important is it to your support person that you succeed?	5.6	(2.2)	6.5	(1.1)	2.24*
How often can you depend on this person?	4.9	(2.4)	5.9	(1.7)	1.87
How easy is it for you to make new friends?	5.5	(1.4)	5.1	(1.5)	< 1

*$p < .05$

[1] Means are based on 7-point scales where higher scores= more favorable outcome. Figures in parentheses are standard deviations.

[2] T-tests for independent samples (2-tailed tests)

MATH 110

TABLE 18
Variables Which Discriminate Between Successful and Unsuccessful Students in Math 110 Arranged in Order of Significance

VARIABLE	GROUP				Standardized Coefficients[1]
	Unsuccessful		Successful		
	Mean	(Sd)	Mean	(Sd)	
1. Mother's education level	2 Yr College		HS		.90
2. Ability to make friends	5.51	1.4	5.20	1.5	.66
3. English test score	34.46	20.4	46.26	25.4	.64
4. Father's education level	HS		2 Yr College		.61
5. How important is success	6.00	1.0	6.32	.8	.46
6. Ability to depend upon support system	4.93	2.4	5.93	1.6	.46
7. How important is your success to your support system?	5.68	2.2	6.56	1.0	.39

Canonical Correlation[2] = .50**

CLASSIFICATION ANALYSIS

Actual Group	N	Predicted Group Membership	
		Unsuccessful	Successful
Unsuccessful	16	10 (63%)	6 (38%)
Successful	54	13 (24%)	41 (76%)

Percent of Students Correctly Classified: 72.8%

*p< .01

1 These are Z-scores. They indicate how powerful each variable is as a predictor. Thus, a variable with a .80 value contributes twice as much as a .40 variable.

2 A canonical correlation represents the correlation between the predictor variables & the two groups and is interpreted in the usual manner.

POLITICAL SCIENCE 101

Summary

- Successful students had higher grades in their last English course.
- Mother's education, grade in last English class, and math test score differentiated the groups with 75% accuracy.

POLITICAL SCIENCE 101

TABLE 19
Comparison of Group Characteristics

VARIABLE		GROUP				X^2
		Unsuccessful		Successful		
		N	%	N	%	
Sex						
Men		3	20	22	50	
Women		12	80	22	50	
Had HS Algebra	Yes	12	80	42	96	3.45
	No	3	20	2	4	
Hours worked During College						
	None	0	--	4	9	3.43
	1-10	1	7	2	5	
	11-20	8	53	14	32	
	21-30	4	27	14	32	
	31-40	2	13	10	23	
Mothers Education						
	< 12th	0	--	11	25	8.25
	High School	4	27	17	39	
	2 Yr. College	6	40	11	25	
	BA/BS	3	20	3	7	
	Graduate School	2	13	2	5	
Fathers Education						
	< 12th	0	--	10	23	4.69
	High School	4	27	10	23	
	2 Yr. College	6	40	16	36	
	BA/BS	3	20	5	11	
	Graduate School	2	13	3	7	
Attended Summer Readiness						
	Yes	1	7	4	9	< 1
	No	14	93	40	91	
Primary Support System						
	Mother or Father	15	100	29	66	6.85
	Sibling	0	--	1	2	
	Friend	0	--	7	16	
	Nobody	0	--	5	11	

TABLE 20
Comparison of Mean Scores[1] for Personal Items Across Groups

VARIABLE	GROUP				t^2
	Unsuccessful (N= 15)		Successful (N= 44)		
	Mean	(SD)	Mean	(SD)	
How important is success to student?	6.2	(1.1)	6.1	(0.9)	< 1
How important is it to your support person that you succeed?	6.2	(1.5)	6.3	(1.7)	< 1
How often can you depend on this person?	6.2	(1.6)	5.8	(2.0)	< 1
How easy is it for you to make new friends?	5.6	(1.5)	5.3	(1.6)	< 1

[1] Means are based on 7-point scales where higher scores= more favorable outcome. Figures in parentheses are standard deviations.

[2] T-tests for independent samples (2-tailed tests)

POLITICAL SCIENCE 101

TABLE 21
Variables Which Discriminate Between Successful and Unsuccessful Students in Political Science 101 Arranged in Order of Significance

VARIABLE	GROUP				Standardized Coefficients[1]
	Unsuccessful		Successful		
	Mean	(Sd)	Mean	(Sd)	
1. Mother's education level	2 Yrs. College		HS		.96
2. Grade in last english class	3.00	.7	3.29	1.4	.47
3. Math test score	15.26	11.1	18.20	11.1	.37

Canonical Correlation[2] = .43*

CLASSIFICATION ANALYSIS

Actual Group	N	Predicted Group Membership	
		Unsuccessful	Successful
Unsuccessful	15	9 (60%)	6 (40%)
Successful	44	9 (21%)	35 (80%)

Percent of Students Correctly Classified: 74.6%

*$p < .05$

[1] These are Z-scores. They indicate how powerful each variable is as a predictor. Thus, a variable with a .80 value contributes twice as much as a .40 variable.

[2] A canonical correlation represents the correlation between the predictor variables & the two groups and is interpreted in the usual manner.

PSYCHOLOGY 100

Summary

- Successful students are employed less hours each week.
- The majority of fathers of successful students have two years of college.
- 37% of unsuccessful students had fathers who had less than HS education.
- The majority of mothers of successful students had HS education.
- Father's & mother's education, HS GPA, English score, ability to make friends, and dependable support systems differentiated the groups at 76% accuracy.

PSYCHOLOGY 100

TABLE 22
Comparison of Group Characteristics

VARIABLE		GROUP				X^2
		Unsuccessful		Successful		
		N	%	N	%	
Sex						
Men		3	40	12	34	
Women		12	60	23	66	
Had HS Algebra	Yes	16	80	32	91	1.49
	No	4	20	3	9	
Hours worked During College						
	None	0	--	5	14	4.58
	1-10	1	5	1	3	
	11-20	9	45	9	26	
	21-30	6	30	12	34	
	31-40	4	20	8	23	
Mothers Education						
	< 12th	7	35	7	20	1.95
	High School	6	30	16	46	
	2 Yr. College	5	25	8	23	
	BA/BS	1	5	2	6	
	Graduate School	1	5	2	6	
Fathers Education						
	< 12th	7	37	7	20	4.67
	High School	5	26	6	17	
	2 Yr. College	4	21	11	31	
	BA/BS	1	5	8	23	
	Graduate School	2	11	3	9	
Attended Summer Readiness						
	Yes	0	--	2	6	1.18
	No	20	100	33	94	
Primary Support System						
	Mother or Father	14	70	1	3	4.54
	Sibling	1	5	0	--	
	Friend	2	10	4	11	
	Nobody	2	10	6	17	

TABLE 23
Comparison of Mean Scores[1] for Personal Items Across Groups

VARIABLE	GROUP				t^2
	Unsuccessful (N= 20)		Successful (N= 35)		
	Mean	(SD)	Mean	(SD)	
How important is success to student?	5.8	(0.9)	6.2	(0.8)	1.58
How important is it to your support person that you succeed?	6.1	(1.5)	6.5	(1.7)	1.03
How often can you depend on this person?	5.4	(2.2)	6.2	(2.2)	1.22
How easy is it for you to make new friends?	6.1	(1.1)	5.5	(1.2)	1.47

[1] Means are based on 7-point scales where higher scores= more favorable outcome. Figures in parentheses are standard deviations.

[2] T-tests for independent samples (2-tailed tests)

PSYCHOLOGY 100

TABLE 24
Variables Which Discriminate Between Successful and Unsuccessful Students in Psychology 100 Arranged in Order of Significance

VARIABLE	GROUP				Standardized Coefficients[1]
	Unsuccessful		Successful		
	Mean	(Sd)	Mean	(Sd)	
1. Father's education level	HS		2 Yrs. College		1.03
2. How important is success?	5.89	.8	6.22	.9	.56
3. Mother's education level	< 12th		HS		.54
4. HS GPA	2.75	.5	2.89	.5	.54
5. Ability to make friends	6.00	1.0	5.57	1.2	.48
6. English test score	35.36	28.5	49.14	30.4	.46
7. Ability to depend upon support system	5.32	2.2	6.17	2.2	.34

Canonical Correlation[2] = .53*

CLASSIFICATION ANALYSIS

Actual Group	N	Predicted Group Membership	
		Unsuccessful	Successful
Unsuccessful	19	14 (74%)	5 (26%)
Successful	35	8 (23%)	27 (77%)

Percent of Students Correctly Classified: 75.9%

*$p < .05$

[1] These are Z-scores. They indicate how powerful each variable is as a predictor. Thus, a variable with a .80 value contributes twice as much as a .40 variable.

[2] A canonical correlation represents the correlation between the predictor variables & the two groups and is interpreted in the usual manner.

SPEECH 100

Summary

- Successful students could depend on their support systems even more than unsuccessful students.
- More of the successful group had high school algebra (92% vs 78%).
- At least 17% of the successful group had a mother and a father with a BA/BS or graduate degree while none of the unsuccessful group had a parent in this range.
- Reading score, math score, the grade in last English class, ability to depend on support system, and number of years of high school English differentiated the groups with 80% accuracy.

SPEECH 100

TABLE 25
Comparison of Group Characteristics

VARIABLE		GROUP				X^2
		Unsuccessful		Successful		
		N	%	N	%	
Sex						
Men		6	67	27	42	
Women		3	33	38	58	
Had HS Algebra	Yes	7	78	60	92	1.94
	No	2	22	5	8	
Hours worked During College						
	None	0	--	5	8	2.99
	1-10	1	11	2	3	
	11-20	2	22	25	39	
	21-30	4	44	20	31	
	31-40	2	22	13	20	
Mothers Education						
	< 12th	3	33	20	31	2.80
	High School	5	56	22	34	
	2 Yr. College	1	11	12	19	
	BA/BS	0	--	7	11	
	Graduate School	0	--	4	6	
Fathers Education						
	< 12th	3	33	21	33	2.26
	High School	3	33	14	22	
	2 Yr. College	3	33	17	27	
	BA/BS	0	--	8	13	
	Graduate School	0	--	4	6	
Attended Summer Readiness						
	Yes	0	--	7	11	1.07
	No	9	100	58	89	
Primary Support System						
	Mother or Father	6	67	46	71	11.05
	Sibling	2	22	1	2	
	Friend	0	--	10	15	
	Nobody	0	--	3	5	

SPEECH 100

TABLE 26
Comparison of Mean Scores[1] for Personal Items Across Groups

VARIABLE	GROUP				t^2
	Unsuccessful (N= 9)		Successful (N= 65)		
	Mean	(SD)	Mean	(SD)	
How important is success to student?	6.1	(1.0)	6.3	(0.8)	< 1
How important is it to your support person that you succeed?	6.7	(0.5)	6.5	(1.0)	< 1
How often can you depend on this person?	5.3	(1.8)	6.0	(1.6)	1.16
How easy is it for you to make new friends?	5.6	(1.2)	5.9	(0.9)	< 1

[1] Means are based on 7-point scales where higher scores= more favorable outcome. Figures in parentheses are standard deviations.

[2] T-tests for independent samples (2-tailed tests)

SPEECH 100

TABLE 27
Variables Which Discriminate Between Successful and Unsuccessful Students in Speech 100 Arranged in Order of Significance

VARIABLE	GROUP Unsuccessful Mean	(Sd)	Successful Mean	(Sd)	Standardized Coefficients[1]
1. Reading score	14.44	16.9	41.50	28.6	.78
2. Math test score	8.78	10.4	18.80	12.4	.59
3. Grade in last English class	2.88	.6	3.20	1.0	.47
4. Ability to depend upon support system	5.33	1.8	6.01	1.6	.39
5. Years of HS English	3.55	.6	3.37	.7	.30

Canonical Correlation[2] = .46*

CLASSIFICATION ANALYSIS

Actual Group	N	Predicted Group Membership: Unsuccessful	Successful
Unsuccessful	9	8 (89%)	1 (11%)
Successful	65	14 (22%)	51 (79%)

Percent of Students Correctly Classified: 79.7%

*p< .05

[1] These are Z-scores. They indicate how powerful each variable is as a predictor. Thus, a variable with a .80 value contributes twice as much as a .40 variable.

[2] A canonical correlation represents the correlation between the predictor variables & the two groups and is interpreted in the usual manner.

DATE: February 28, 1989

TO: Selected Current and Former
Rancho Santiago College Students

FROM: RSC Research Office

Our Records indicate that within the last year and a half you were enrolled in an RSC English, Math, Political Science, Psychology, or Speech class. Our office frequently conducts studies about promoting student success in courses. And now, we are studying the courses named above and which factors contribute to success in those courses.

Will you please help us by completing this questionnaire and returning it to us in the enclosed envelope by March 15, 1989?

Your answers are confidential, and your responses will remain anonymous.

If you bring your completed questionnaire to our office, Room A-37, we'll give you a coupon for a FREE Hamburger, Hot Dog or Quesadilla in our cafeteria! Thanks for your help.

Student Background Questionnaire

1. What month and year did you graduate from high school? _____ _____
   Month Year
2. What was your high school grade point average? _____ . _____
3. What grade did you receive in the last English course you completed in high school? _____
4. How many years of English did you complete in high school? _____ . _____
5. Did you complete at least one year of Algebra in high school? Yes_____ No_____
6. What was the average number of hours you were employed when you attended college? *(Check One)*

   0 hours _____ 11-20 hours _____ 31-40 hours _____

   1-10 hours _____ 21-30 hours _____

7. How important is it to you to be successful in college, on a scale of one to seven, with seven being very important and one being not important?

   Very Important 7 6 5 4 3 2 1 Not Important
   (Circle One)

8. What is the highest educational level attained by your (biological) mother and father?

Mother *(Check One)*		Father *(Check One)*
_____	Less than 12th grade	_____
_____	High school graduate	_____
_____	2 years college	_____
_____	B.A. or B.S. degree	_____
_____	Graduate education	_____

please turn over

9. Did you participate in the college "Summer Readiness Program?" Yes_____ No_____

10. Who gives you (or gave you) the most encouragement for attending college?

Mother or Father _____

Sister or Brother _____

Spouse _____

Friend(s) _____

No one _____

11. How important is it to this person that you be successful in college?

Very important 7 6 5 4 3 2 1 Not important

(Circle One)

12. How often can you depend on this person to help you?

Always 7 6 5 4 3 2 1 Never

(Circle One)

13. How easy is it for you to make new friends?

Very easy 7 6 5 4 3 2 1 Difficult

(Circle One)

14. Have you used any of the following college facilities or participated in any of the following activities, and how often?

	Never	Once	Two or Three Times	Lots of Times
Library				
Fitness Center				
Cafeteria				
Plays in Phillips Hall				
Outdoor bar-b-ques				
Health Center				
Johnson Center Lounge				
Outdoor Concerts				
Art Exhibits				
Sports events or games				
Student clubs				
Displays/exhibits on mall				
Counselor appointment				
Career Center				
Job Placement				
Financial Aid				
Student orientation				
Learning Center				

#3-B:STUDENT2

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